

Williams[®]

16-3007-101
August, 1982

Moon Patrol

PRELIMINARY

FOR SERVICE...
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Williams[®]
ELECTRONICS, INC.

3401 N. California Ave., Chicago, IL 60618

DIP SWITCH SETTINGS

DIP SWITCH NO. 1

ADJUSTMENT	OPTIONS	SWITCH NUMBER							
		1	2	3	4	5	6	7	8
*RECOMMENDED SETTINGS		ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
†COIN MODE 1	2 PLAYS/1 COIN 3 PLAYS/1 COIN 4 PLAYS/1 COIN					OFF ON OFF	OFF OFF ON	OFF OFF OFF	ON ON ON
	5 PLAYS/1 COIN 6 PLAYS/1 COIN *1 PLAY/1 COIN					ON OFF OFF	ON OFF OFF	OFF ON OFF	ON ON OFF
	1 PLAY/2 COINS 1 PLAY/3 COINS 1 PLAY/4 COINS					ON OFF ON	OFF ON ON	OFF OFF OFF	OFF OFF OFF
	1 PLAY/5 COINS 1 PLAY/6 COINS FREE PLAY					OFF ON ON	OFF OFF ON	ON ON ON	OFF OFF ON
†COIN MODE 2	1 PLAY/1 COIN 1 PLAY/2 COINS 1 PLAY/3 COINS					OFF ON OFF	OFF OFF ON		
	FREE PLAY					ON	ON		
	2 PLAYS/1 COIN 3 PLAYS/1 COIN 5 PLAYS/1 COIN 6 PLAYS/1 COIN							OFF ON OFF ON	OFF OFF ON ON
# PATROL CARS	5 PATROL CARS *4 PATROL CARS 3 PATROL CARS 2 PATROL CARS	OFF ON OFF ON	OFF OFF ON ON						
ADDITIONAL CAR AT:	*10,000/30,000/50,000 20,000/40,000/60,000 10,000 ONLY NO EXTENDED PLAY			OFF ON OFF ON	OFF OFF ON ON				

DIP SWITCH NO. 2

ADJUSTMENT	OPTIONS	SWITCH NUMBER							
		1	2	3	4	5	6	7	8
*RECOMMENDED SETTINGS		OFF	ON	†	OFF	OFF	OFF	OFF	OFF
FLIP PICTURE	NO YES	OFF ON							
**CABINET TYPE	TABLE UPRIGHT		OFF ON						
COIN MODE SETTINGS FOR DIP SWITCH 1	COIN MODE 1 COIN MODE 2			OFF ON					
FREEZE SCREEN	*NO YES					OFF ON			
SECTOR-SELECTION FEATURE	*NO YES						OFF ON		
DEMO MODE	*NO YES							OFF ON	
TEST MODE	*NO YES								OFF ON
SWITCH 4 (not used)					OFF				

*recommended settings

**For upright games, select ON for switch 2. Table games require OFF for switch 2.

†For games with a single coin selector or 2 selectors of the same value, S3 must be turned off. For games with selectors for 2 different coin values, S3 must be turned on.

MOON PATROL DIAGNOSTICS

Turn switch #8 of DIP switch #2 to the ON position and turn power ON. The MOON PATROL diagnostic program consists of 8 independent tests, 2 of which are automatic at turning power ON in diagnostic mode: RAM Test and ROM Test. After these two tests have been properly completed, pressing the 2 Player button brings an index of the other tests to the CRT display:

- 01 DIP SWITCH
- 02 I-O PORT*
- 03 SOUNDS
- 04 CHARACTER
- 05 COLOR
- 06 CROSS HATCH PATTERN

* Control Panel and Coin Door switches test.

As any test other than 02 is completed, pressing the 2-Player button returns the test index to the monitor display. When test 02 is completed, the joystick lever must be moved left while pressing the 2 Player button to return the test index. If no further testing is desired, turn power OFF and return switch #8 of DIP switch #2 to the OFF position.

RAM Test

If checked to be OK, "RAM OK" appears on monitor. If not OK, "RAM NG XXXX YY ZZ" appears on monitor (without ROM test results).

↑ ↑ ↑
Faulty RAM address RAM Input Data RAM Output Data

If RAM is shown to be NG at address E000 - E7FF failure can have occurred in either 3B RAM or 2K decoder. If RAM is shown to be NG at address 8000 - 87FF failure can have occurred at RAM chip 3C or circuitry directly associated with the RAM chip--Chips 7J, 7K, 6A, 5D, 6D, 4A, 4B, 4C, and 4D of the Scrolling Video board or chip 5M of the CPU board. A faulty chip must be replaced to continue diagnostics.

ROM Test

If checked to be OK, the display below appears on the monitor.

```
"RAM     OK"  
"ROM 0   OK   FF"  
"ROM 1   OK   FF"  
"ROM 2   OK   FF"  
"ROM 3   OK   FF"
```

If any are not OK, for example ROM 1; this appears on monitor.

```
"RAM     NG"  
"ROM 0   OK   FF"  
"ROM 1   NG   FF"  
"ROM 2   OK   FF"  
"ROM 3   OK   FF"
```

A faulty ROM must be replaced to continue diagnostics.

01 DIP SWITCH Test

Shows state of all switches contained in DIP switches #1 & #2 and the resulting game adjustments; as in Example 1-1.

Example 1-1: DIP Switch Recommended Settings

0 = OFF, 1 = ON

DIP SW	1	2	3	4	5	6	7	8
SW1	1	0	0	0	0	0	0	0
SW2	0	1	0	0	0	1	0	1

PATROL CARS 4
ADDITIONAL CARS
POINTS 10, 30, 50 THOUSAND

DIP SW Test Example 1-1 (Cont.)

COIN MODE 1 COIN 2 PLAYS

BODY TYPE UPRIGHT

If any switch(es) of a DIP switch set is (are) not represented correctly, the respective DIP switch set or any of chips 1E, 1F, 1H, or 2J could be malfunctioning.

Switch #8 of DIP switch #2 is shown as "1" only because that is the position required for game diagnostics.

02 I-O PORT (Control Panel/Coin Door Switch) Test

Shows if all controls and coin mechanisms are functioning properly by displaying a matrix composed of the states of switches on the Control Panel and Coin Door as shown in Example 1-2.

Example 1-2: 0 = OFF 1 = ON

	1	2	3	4	5	6	7	8
KEY 0	0	0	0	0	0	0	0	0
KEY 1	0	0	0	0	0	0	0	0
KEY 2	0	0	0	0	0	0	0	0

TIMING 0000

The TIMING number starts at 0000 and adds one count approximately every second.

If any Control Panel or Coin Door switch is closed a "1" will appear in the above matrix as follows:

1 Player Start Button	KEY0-1
2 Player Start Button	KEY0-2
Coin Switch A	KEY0-4
Joystick Right (Faster)	KEY1-1
Joystick Left (Slower)	KEY1-2
Jump	KEY1-6
FIRE	KEY1-8
Coin Switch B	KEY2-5

Coin Switch B is present only in games with coin doors that accept coins of two different values.

To end this test and return to test index: move joystick lever left while pressing the 2 Player Start Button.

03 SOUNDS Test

A list of sounds normally produced by the game appears as shown below on the monitor.
Move joystick lever as necessary to light the number of the sound desired to test and
press the 1 Player start button for repetition of the sound.

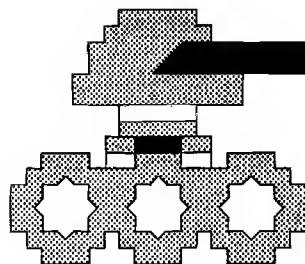
Example 1-3:

- 01 EXPLOSION (ROCK)
- 02 PASSING ONE POINT
- 03 UFO EXPLOSION
- 04 MISSILE FROM CAR
- 05 COIN
- 06 CAR JUMP
- 07 SPACE PLANT
- 08 UFO FLYING
- 09 BACK GROUND MUSIC
- 10 ENDING MUSIC
- 11 OPENING MUSIC
- 12 REACHING GOAL
- 13 CONGRATULATION
- 14 CAR EXPLOSION


04 CHARACTER Test


A display composed of 8 tanks vertically and horizontally flipped as shown below
appears on monitor.

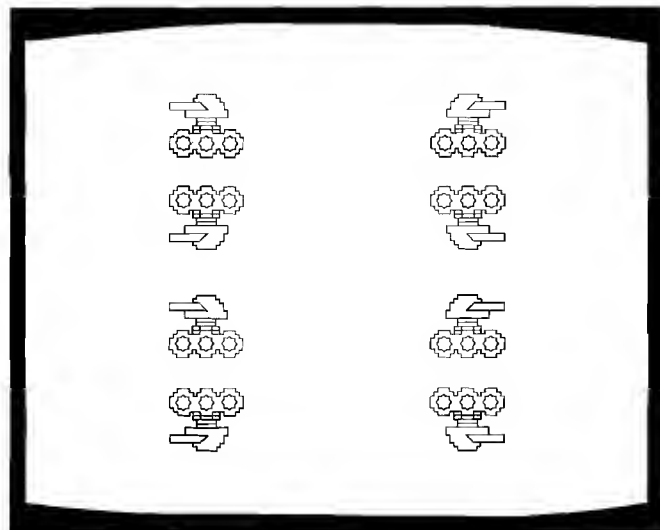
TANK = GRN
TREADS = GRN
TREAD WHEELS = VIOLET
GUN = RED



 = GREEN

 = RED

 = VIOLET



05 COLOR Test

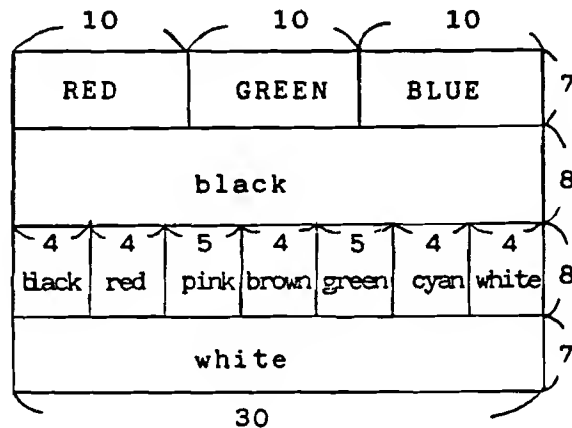
This test consists of 5 independent steps as follows:

1. An alphanumeric display is shown as below over a row of numbers 0 thru 9, letters blue and numbers white.

ABCDEFGHIJKLMNOPQRSTUVWXYZ

0123456789

2. A color pattern is displayed as shown:



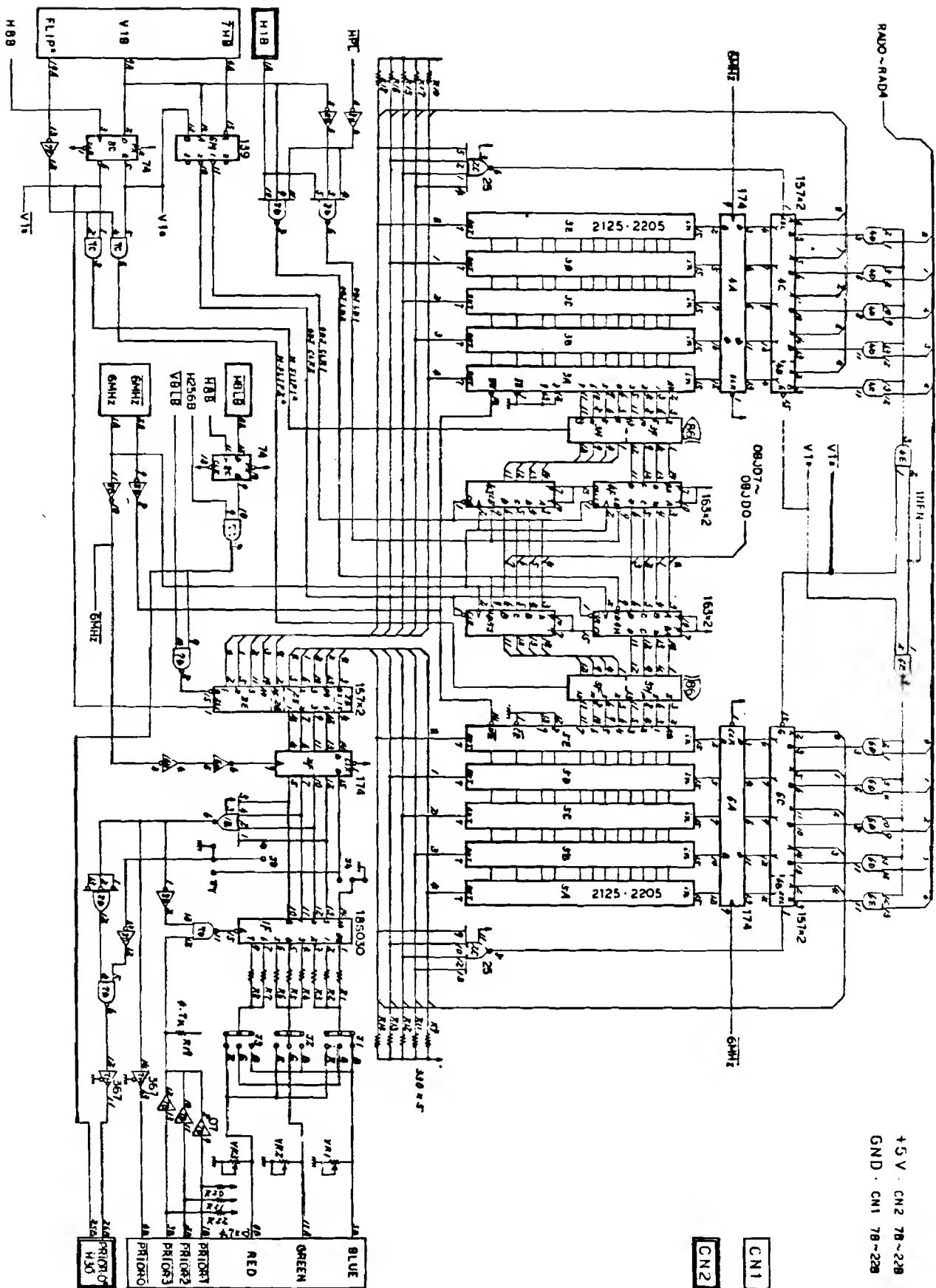
*Numbers are the ratio of size used for each color.

3. A field of red is displayed.
4. A field of green is displayed.
5. A field of blue is displayed.

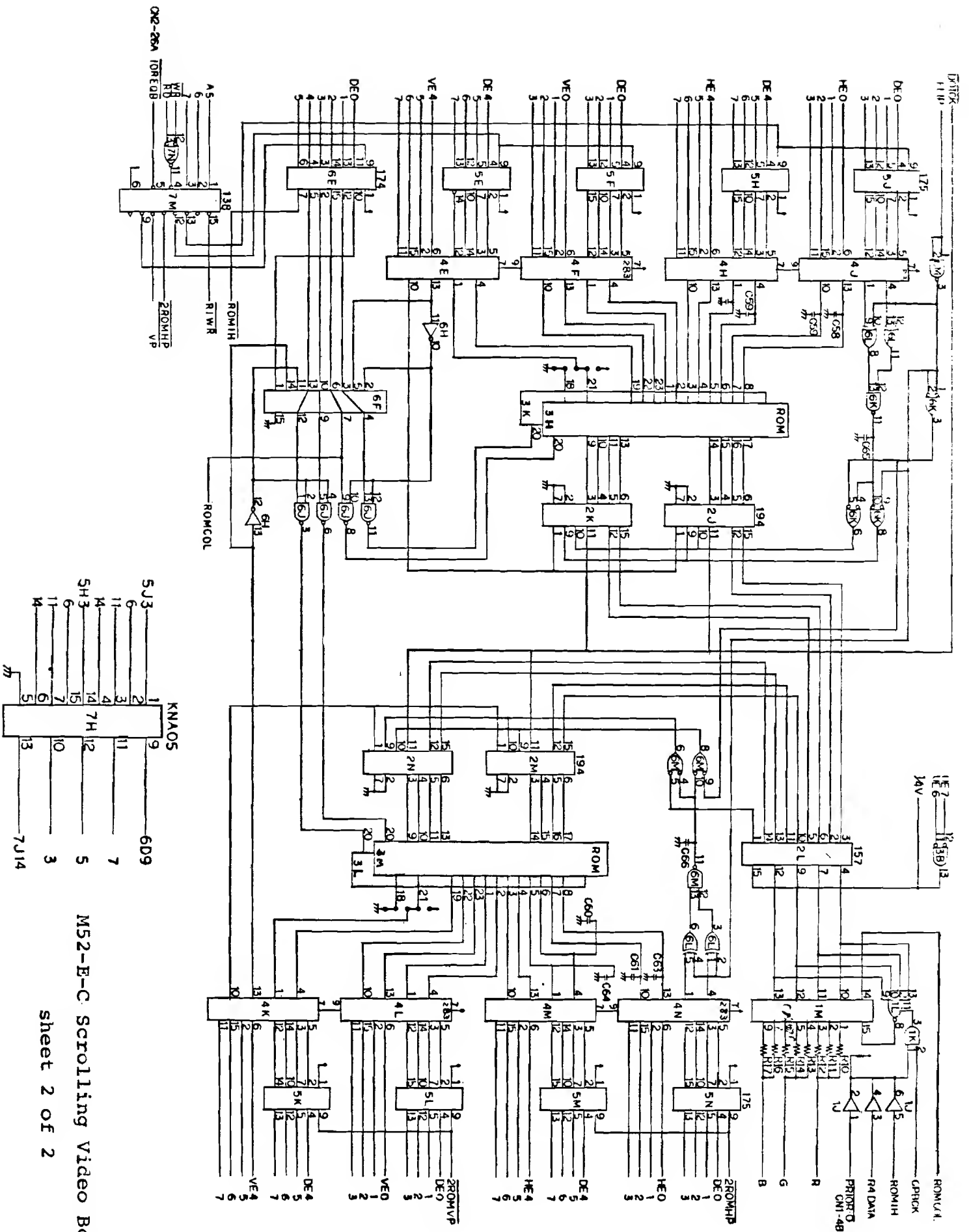
Each independent step of this COLOR test can be advanced through by pressing the 1 Player start button.

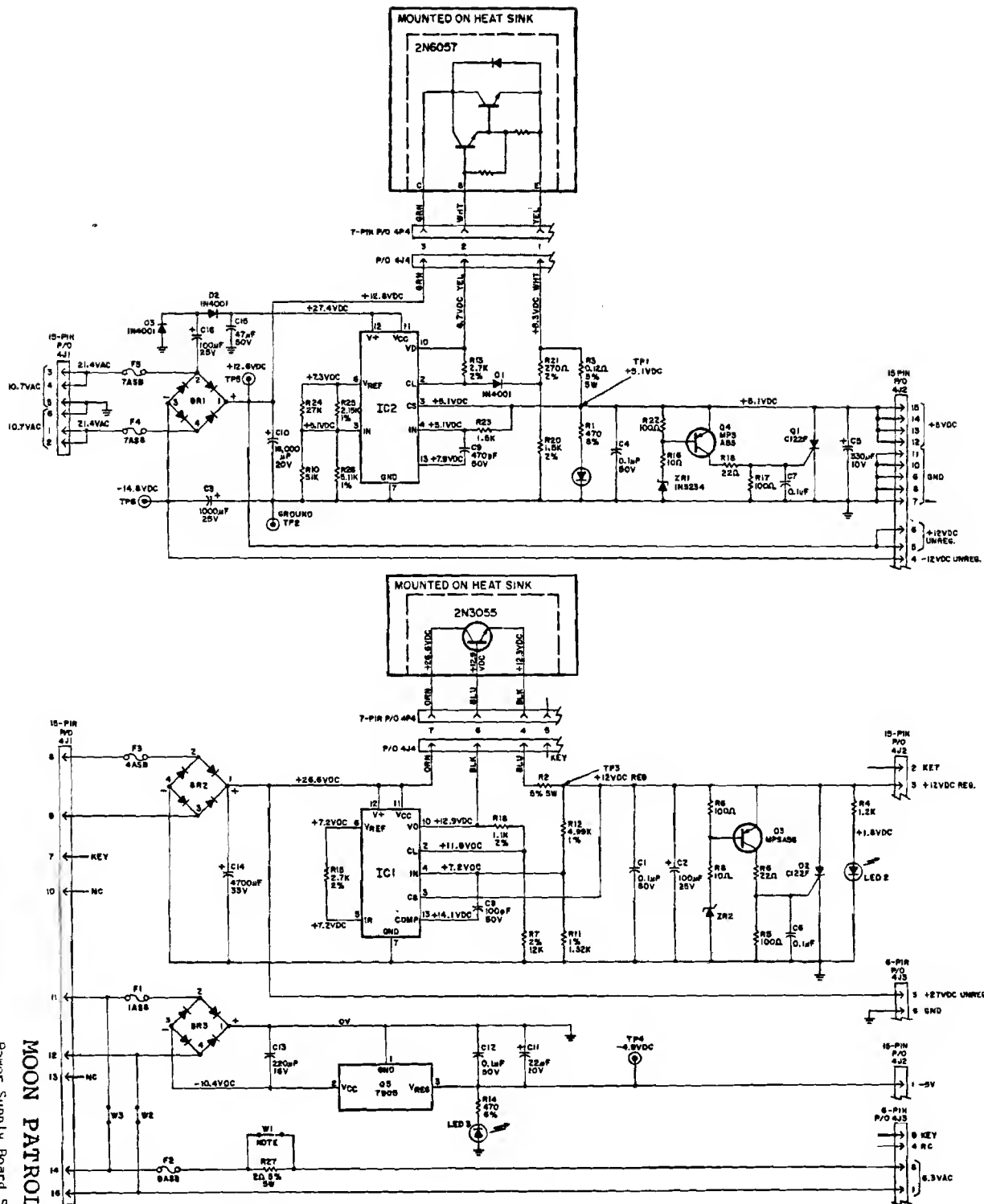
06 CROSS HATCH PATTERN Test

A white line matrix 16 lines vertical x 16 lines horizontal is displayed.



M52-R-C Character Board
sheet 2 of 2





MOON PATROL UPRIGHT

PRELIMINARY PARTS LIST

DESCRIPTION	PART NO.	DESCRIPTION	PART NO.
Cabinet Assembly	AB-11-689	Coin Door	C-8989
Leg Adjuster Nut	08-7025		
Leg Adjuster	08-7391	Cash Box Door	C-8832
Cabinet	11-689		
		Cash Box Lock Bracket	01-7176
Marquee	31-1069-3007-U	Cash Box Cover	01-7720
Marquee Molding Top	20-9322	Deep Cash Box	03-7625
Marquee Molding Bottom	20-9306	Cash Box Handle	12-6589
Speaker Panel	D-9157	Locks	20-8995
Speaker	5555-09382-01		
Speaker Mounting Bracket	01-7466	Upper Rear Door	C-9462
Speaker Panel	11-685-4	Door Lock	20-6542-TB
Speaker Panel Cover	03-7712	Lock Cam	01-6583
Speaker Shield	03-7748	Lower Rear Door	C-9436
CRT Cover	31-1068-3007-U		
Instruction Card	16-3007-17	Monitor/Shelf Assembly	B-9368-2
CRT Bezel	03-7749	Monitor Shelf	11-685-2
		Monitor	5675-09979-00
Control Panel	R-9430		
Red Button Assembly	C-9214-4	Moon Patrol Circuit Boards	A-9436
White Button Assembly	C-9214-5		
Yellow Button Assembly	C-9214-6	Power Supply Assembly	C-9437
Joy Stick	20-9254	Heat Sink	C-8809
Trunk Latch Bracket	01-6994	PCB Plate	C-9265
Trunk Latch	20-9266	P.S. PCB Assembly	D-8784-3007-U
Control Panel Hinge	20-9447		
Control Panel Overlay	31-1067-3007-U	Power Pack	D-9187-3007
		Transformer	C-8529
		Line Voltage Cable	H-9084
		Vent Hole Cover	03-7602

MOON PATROL - COCKTAIL

PRELIMINARY PARTS LIST

DESCRIPTION	PART NO.
Cash Box Assembly	D-8603
Glide with Screw	20-9261
Monitor/Supports Assembly	B-9237-1
Cocktail CRT Support - L	11-679-3-L
Cocktail CRT Support - R	11-679-3-R
19" Monitor 19K4903	5675-09979-00
Line Voltage Cable Assembly	D-8613
Power Pack System 3 "T"	D-9188-3007
Heat Sink Assembly	C-8809
P.S. PCB Assembly	D-8784-3007-T
Power Pack-T Sub Assembly	D-9275
Transformer Assembly	C-8609
PCB Plate Sub Assembly	C-9265
Power Supply Mounting Board	
Clamp & Gasket Assembly - Table Top	B-8692
Cocktail Brace Assembly	B-9276
Stud-Shoulder Hinge	02-4122
Cocktail Top Brace	20-9262
Mask w/Instruction Cards	D-9240-3007
Cabinet Top Hinge Cocktail	01-7105
Top Lock Catch Bracket	01-7190
Top Lock Catch	02-4039
CRT Bezel *	03-7731
CRT Filter	03-7732
Cocktail Glass Blank	08-7384
Cocktail Top	11-679-4
Control Panel	D-9432
Red Button Assembly	C-9214-4
Yellow Button Assembly	C-9214-5
Joy Stick	20-9254
Control Panel Cover	31-1070-3007-T

MOON PATROL - COCKTAIL

PRELIMINARY PARTS LIST (Continued)

DESCRIPTION	PART NO.
Component Door	D-9451
PCB's Assembly	A-9436
Lock Bracket - Cocktail	01-7102
Door Kick Plate	01-7115
Speaker Grill-T	03-7622
PCB Mounting Block	11-689-2
PCB Mounting/Stop Block	11-689-3
Component Door	11-690-2
Speaker	5555-09626-00
Coin Door Assembly	D-9452
Light Socket Assembly	A-8639
Lock Link & Stud Assembly	A-8650
Red Button Assembly	A-8654
Terminal Strip & Diode	A-9103
Lock Link/Stud Assembly	B-8651
Coin Door Lock Guide	01-7099
Coin Door Hinge	01-7103
Coin Door Kick Plate	01-7117
Guide Bracket	01-7131
Guide Strip	01-7133
Lock Link / Lower	01-7134
Lock Mech Guide	02-4029
Coin Mech - Quarter	09-11000
Cocktail Coin Door	11-679-5
Cam Lock - Coin Door	20-6542-TB
Cocktail Coin Door Cover	31-1057-3005-T

Warning: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. As temporarily permitted by regulation it has not been tested for compliance pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference."